

**ITEM 404.XXYZQ108 – WARM MIX ASPHALT**

**DESCRIPTION.** This work shall consist of developing, producing, and paving a Warm Mix Asphalt (WMA) mixture. WMA is standard HMA produced using a WMA technology typically resulting in a production mixture temperature of 275°F or lower.

WMA pavement course shall be constructed in accordance with this specification and in reasonably close conformity with the required lines, grades, thicknesses, and typical sections shown on the plans or established by the Engineer. The Contractor is responsible for compacting pavement to a specified density requirement.

The words “hot mix asphalt” and “HMA” in the standard specifications and other documents referenced by this specification shall apply to WMA.

**MATERIALS.** Requirements of §401-2 and §402-2 shall apply except as noted herein.

1. **WMA Technology.** Use a WMA technology appearing on the State’s Approved List for Warm Mix Asphalt Technologies.
2. **WMA Design.** Design a mixture using a WMA Technology in accordance with MM 5.16, *Superpave Hot Mix Asphalt Mixture Design and Mixture Verification Procedure*. At a minimum, a one point verification of the mixture’s volumetric properties is acceptable for the following situations:
  - When the WMA mix design is based on an existing Production Status HMA mix design.
  - When the WMA mix design utilizes a different WMA technology than an existing Production Status WMA mix design.

Comply with the manufacturer’s recommendations for incorporating the WMA technology. Notify the Regional Material Engineer (RME) how the WMA technology will be incorporated prior to fabricating the test specimens. Test specimens may be made from plant produced or laboratory prepared WMA. Test specimens must be made from plant produced WMA if adding the WMA technology in the lab does not simulate the production process. The RME may require a State representative be present during the fabrication and testing. Submit the WMA design to the RME for review and verification at least 14 calendar days before production, including:

- Name of WMA technology being used and the target dosage rate.
- If using an additive other than water,
  - Submit a MSDS for the additive.
  - Submit either enough of the additive for the laboratory mix design verification, or the additive pre-blended in the PG Binder at the correct dosage. If the additive is not pre-blended into the PG Binder, include directions for properly incorporating the additive into the laboratory made mixture.

Prior to the submission of any mix design, contact the RME to determine if there is an increased concern regarding the mixture’s moisture susceptibility based on the WMA technology and/or the type of aggregate being used, or the performance of similar mixes. The RME may require AASHTO T 283 moisture susceptibility test results, meeting a minimum Tensile Strength Ratio (TSR) of 80%, as part of the mix design submission.

Submit Production Quality Control Plan revisions incorporating the WMA technology if not previously submitted.

**CONSTRUCTION DETAILS.** Requirements of §401-3 and §402-3 shall apply except as noted herein.

**Mix Temperature.** Select a desired WMA mixture temperature within the mixing and compaction range as recommended by the WMA technology provider. If the asphalt mixture is being placed over a *Sheet-Applied Waterproofing Membrane*, maintain a minimum delivery temperature in accordance with the Material Detail Sheets prepared by the membrane manufacturer.

For 80 Series compaction method, complete all breakdown roller passes before the mat temperature falls below 230°F, unless approved by the Director, Materials Bureau.

**METHOD OF MEASUREMENT.** Requirements of §401-4 and §402-4 shall apply.

**BASIS OF PAYMENT.** The unit price bid for WMA mixtures shall meet the requirements specified in §402-5 Basis of Payment

<b>Item No.</b>	<b>Item</b>	<b>Pay Unit</b>
404.01090108	Type 1 F9, Asphalt-Treated Permeable Base Course	Ton
404.01190108	Type 2 F9, Asphalt-Treated Permeable Base Course	Ton
404.01790108	True & Leveling F9, WMA, 70 Series Compaction	Ton
404.01890108	True & Leveling F9, WMA, 80 Series Compaction	Ton
404.05890108	Shim Course F9, Warm Mix Asphalt	Ton
404.09510108	9.5 F1 WMA, 50 Series Compaction	Ton
404.09520108	9.5 F2 WMA, 50 Series Compaction	Ton
404.09610108	9.5 F1 WMA, 60 Series Compaction	Ton
404.09620108	9.5 F2 WMA, 60 Series Compaction	Ton
404.09630108	9.5 F3 WMA, 60 Series Compaction	Ton
404.09710108	9.5 F1 WMA, 70 Series Compaction	Ton
404.09720108	9.5 F2 WMA, 70 Series Compaction	Ton
404.09730108	9.5 F3 WMA, 70 Series Compaction	Ton
404.09810108	9.5 F1 WMA, 80 Series Compaction	Ton
404.09820108	9.5 F2 WMA, 80 Series Compaction	Ton
404.09830108	9.5 F3 WMA, 80 Series Compaction	Ton
404.09890108	9.5 F9 WMA, Shoulder Course, 80 Series Compaction	Ton
404.12510108	12.5 F1 WMA, 50 Series Compaction	Ton
404.12520108	12.5 F2 WMA, 50 Series Compaction	Ton
404.12610108	12.5 F1 WMA, 60 Series Compaction	Ton
404.12620108	12.5 F2 WMA, 60 Series Compaction	Ton
404.12630108	12.5 F3 WMA, 60 Series Compaction	Ton
404.12710108	12.5 F1 WMA, 70 Series Compaction	Ton
404.12720108	12.5 F2 WMA, 70 Series Compaction	Ton
404.12730108	12.5 F3 WMA, 70 Series Compaction	Ton
404.12810108	12.5 F1 WMA, 80 Series Compaction	Ton
404.12820108	12.5 F2 WMA, 80 Series Compaction	Ton
404.12830108	12.5 F3 WMA, 80 Series Compaction	Ton
404.12890108	12.5 F9 WMA, Shoulder Course, 80 Series Compaction	Ton
404.19590108	19 F9 WMA, 50 Series Compaction	Ton
404.19690108	19 F9 WMA, 60 Series Compaction	Ton
404.19790108	19 F9 WMA, 70 Series Compaction	Ton
404.19890108	19 F9 WMA, 80 Series Compaction	Ton
404.25590108	25 F9 WMA, 50 Series Compaction	Ton

<b>Item No.</b>	<b>Item</b>	<b>Pay Unit</b>
404.25690108	25 F9 WMA, 60 Series Compaction	Ton
404.25790108	25 F9 WMA, 70 Series Compaction	Ton
404.25890108	25 F9 WMA, 80 Series Compaction	Ton
404.37690108	37.5 F9 WMA, 60 Series Compaction	Ton
404.37790108	37.5 F9 WMA, 70 Series Compaction	Ton
404.37890108	37.5 F9 WMA, 80 Series Compaction	Ton
404.41890108	9.5 F9 Temporary Top Course WMA, 80 Series Compaction	Ton
404.42890108	12.5 F9 Temporary Top Course WMA, 80 Series Compaction	Ton
404.43890108	19 F9 Temporary Binder Course WMA, 80 Series Compaction	Ton
404.44890108	25 F9 Temporary Binder Course WMA, 80 Series Compaction	Ton
404.00001108	Plant Production Quality Adjustment to WMA Items	Quality Unit
404.00002108	Pavement Density Quality Adjustment to WMA Items	Quality Unit
404.00005108	Test Section Adjustment to WMA Items	Quality Unit